



DOCKET NO: 239312US01

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :  
KEITARO SUZUKI, ET AL. : EXAMINER: METZMAIER, D. S.  
SERIAL NO: 10/603,011 :  
FILED: JUNE 25, 2003 : GROUP ART UNIT: 1712  
RCE FILED: MAY 23, 2006  
FOR: MODIFIED METAL OXIDE SOL, :  
COATING COMPOSITIONS AND  
OPTICAL ELEMENT

APPEAL BRIEF

COMMISSIONER FOR PATENTS  
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal of the Rejection dated August 8, 2006 of at least twice-rejected ,  
Claims 10 and 14-18. A Notice of Appeal is **submitted herewith**.

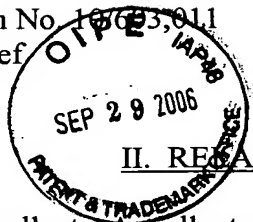
I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Nissan Chemical Industries, Ltd., having an  
address at 7-1, 3-chome, Kanda-Nishiki-cho, Chiyoda-ku, Tokyo, Japan.

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## II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals, interferences, or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF THE CLAIMS

Claims 10 and 14-18, all the claims in the application, stand rejected and are herein appealed.

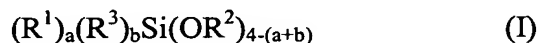
## IV. STATUS OF THE AMENDMENTS

No amendment under 37 CFR 1.116 has been filed.

## V. SUMMARY OF THE CLAIMED SUBJECT MATTER

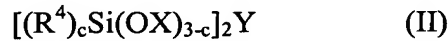
As recited in sole independent Claim 17, the claimed subject matter is an optical element which comprises an optical substrate and a cured film made of a coating composition formed on the surface of the optical substrate, wherein the coating composition comprises the following components (A) and (B):

component (A): at least one silicon-containing substance selected from the group consisting of organic silicon compounds of formula (I):



wherein each of  $R^1$  and  $R^3$  is an alkyl group, an aryl group, a halogenated alkyl group, a halogenated aryl group, an alkenyl group, or an organic group having an epoxy group, an acryloyl group, a methacryloyl group, a mercapto group, an amino group or a cyano group, which is bonded to the silicon atom by a Si-C bond,  $R^2$  is a  $C_{1-8}$  alkyl group, an alkoxyalkyl

group or an acyl group, and each of a and b is an integer of 0, 1 or 2, provided that a+b is an integer of 0, 1 or 2, and the formula (II):



wherein  $R^4$  is a  $C_{1-5}$  alkyl group, X is a  $C_{1-4}$  alkyl group or an acyl group, Y is a methylene group or a  $C_{2-20}$  alkylene group, and c is an integer of 0 or 1, and their hydrolyzates; and

component (B): colloidal particles of a modified metal oxide which have primary particle diameters of from 2 to 100 nm and which contain particles (c) comprising colloidal particles (a) of a metal oxide having primary particle diameters of from 2 to 60 nm, selected from the group consisting of  $Fe_2O_3$  particles, CuO particles, ZnO particles,  $Y_2O_3$  particles,  $ZrO_2$  particles,  $Nb_2O_5$  particles,  $MoO_3$  particles,  $In_2O_3$  particles,  $SnO_2$  particles,  $Ta_2O_5$  particles,  $WO_3$  particles, PbO particles,  $Bi_2O_3$  particles,  $SnO_2-WO_3$  composite particles,  $SnO_2-ZrO_2$  composite particles,  $TiO_2-ZrO_2-SnO_2$  composite particles,  $ZnSb_2O_6$  particles,  $InSbO_4$  particles,  $ZnSnO_3$  particles and combinations thereof, as nuclei, and a coating material (b) comprising alkali component-containing diantimony pentoxide colloidal particles having a  $M/Sb_2O_5$  molar ratio, where M is an alkali metal, ammonium, a quaternary ammonium or an amine, of from 0.02 to 4.00, coated on the surface of the particles (a).

See the specification at page 9, line 17 to page 10, line 18, combined with page 11, lines 18-24, combined with page 12, lines 10-15, combined with page 14, line 14 through page 15, line 10.

## VI. GROUNDS OF REJECTION

### Ground (A)

Claims 10 and 14-18 stand rejected under 35 U.S.C. § 103(a) as obvious over WO 98/39253, as evidenced by U.S. 6,296,943 (Watanabe et al.).

### Ground (B)

Claims 10 and 14-18 stand rejected on the ground of non-statutory obviousness-type double patenting over Claims 11-14 of Watanabe et al.

## VII. ARGUMENT

### Ground (A)

Claims 10 and 14-18 stand rejected under 35 U.S.C. § 103(a) as obvious over Watanabe et al. That rejection is untenable and should not be sustained.

Independent Claim 17 is drawn to an optical element which comprises, *inter alia*, a cured film formed on the surface of an optical substrate, wherein the film is formed from a coating composition which comprises, as component (A), at least one silicon-containing substance, as defined therein, and a component (B), which are **colloidal particles of a modified metal oxide which have primary particle diameters of from 2 to 100 nm and which contains particles (c) comprising colloidal particles (a) of a metal oxide having primary particle diameters of from 2 to 60 nm, and selected from a Markush group of metal oxides, as nuclei, and a coating material (b) comprising alkali component-containing diantimony pentoxide colloidal particles having a M/Sb<sub>2</sub>O<sub>5</sub> molar ratio, where M is an alkali metal, ammonium, a quaternary ammonium or an amine, of from 0.02 to 4.00, coated on the surface of the particles (a).** (Emphasis added.)

The subject matter emphasized above is the subject of Claim 1 of US 6,626,987 (parent patent), which is the patent which issued from the parent application herein, and which Claim 1 is drawn to a stable modified metal oxide sol which contains from 2 to 50 wt %, as calculated as metal oxides, of the same particles (c). Said Claim 1 was issued by the same Examiner herein and in view of, *inter alia*, Watanabe et al.

The question then becomes what is different from the present claims that justifies different treatment. According to an Interview Summary dated August 30, 2006, the Examiner's justification is that the present claims are product-by-process claims, and the "[r]ecord does not indicate that the cured film on the optical substrate retains the particle structure and/or is distinct from cured films made by other methods." The Examiner then refers to page 4, last full paragraph of the Office Action dated August 8, 2006.

As now discussed, the difference between the present invention and Watanabe et al (which are commonly owned) is not simply products which *prima facie* appear to be the same although made by different processes. Rather, Watanabe et al neither discloses nor suggests particles (c) herein, particularly material (b) comprising alkali component-containing diantimony pentoxide colloidal particles having a M/Sb<sub>2</sub>O<sub>5</sub> molar ratio, where M is an alkali metal, ammonium, a quaternary ammonium or an amine, of from 0.02 to 4.00.

Watanabe et al is from the same patent family as JP-A-10-310429, described in the specification herein at page 3, lines 10-11. Applicants note that Watanabe et al discloses various composite sols; however, Watanabe et al discloses no sols in the form of colloidal particles having above-discussed material (b), let alone coated on the surface thereon. The specification herein contains comparative data between the present invention and subject matter outside the terms of the present invention. Included therein is Comparative Composition Example 3, which describes the use of the sol disclosed in Watanabe et al, at page 67, lines 10-17 of the specification. Various properties were evaluated, the results being

shown in Table 2 at page 70 of the specification. Applicants describe, *inter alia*, that “[t]he optical element of Comparative Composition Example 3 was not particularly inferior practically, but was slightly inferior to the optical elements of Composition Examples 1 to 6,” at page 71, lines 10-14. Reliance on this data is not for the purposes of showing unexpected results compared to Watanabe et al, but simply to demonstrate that the present invention is different from that disclosed by Watanabe et al. There is no disclosure or suggestion in Watanabe et al that material (b) herein is present in **any** form therein, let alone to form the above-discussed colloidal particles having a coating (b) therein. In addition, the above-discussed comparative data shows that the Examiner’s finding that “[s]aid salts or alkoxides in acid media would have been expected to have formed colloidal acidic oxides via at least some hydrolysis and condensation of the salts and/or alkoxides and would have coated the particles previously set forth as (B),” is incorrect. Note additionally that in the examples of Watanabe et al, no further reaction of the composite sol therein appears to take place.

The Examiner’s basis for finding non-patentability is that Watanabe et al discloses that their coating compositions may contain fine particulate metal oxides so as to conform to the refractive index of the various optical elements, including, *inter alia*, antimony oxide (column 21, lines 9-14); that Watanabe et al’s examples disclose primary particles of 4-8 nm in a slight alkaline pH; and that Watanabe et al discloses the use of alkylamines (column 13, lines 19-27, and at column 20, lines 64-67) as bases. Based on these disparate disclosures, the Examiner finds that “the addition of at least antimony and aluminum oxides under the disclosed near neutral/alkaline conditions, would have resulted in at least partial coating of the composite oxides.” The Examiner additionally finds that “said [antimony oxide] fine particles would have been attracted to the basic surface groups of the composite oxide particles.”

In reply, the Examiner is, in effect, “testifying” as to the presence of an **acidic** oxide, let alone that of present material (b). The Examiner has provided no factual support, such as in the form of prior art, or his own Declaration as an expert in this art. Indeed, all the disclosure cited by the Examiner is in connection with the preparation of Watanabe et al’s composite sol particles *per se*, and there is no disclosure or suggestion that other particles would be present, let alone as coatings, partial or otherwise. Simply put, while Watanabe et al may have disparate disclosures of alkylamines and antimony oxide, there is no disclosure or suggestion of alkylamine-containing diantimony pentoxide colloidal particles having an alkylamine/Sb<sub>2</sub>O<sub>5</sub> molar ratio of from 0.02 to 4.00 coated on the surface of Watanabe et al’s metal oxide particles, as required by the present claims.

#### Claim 15

Claim 15 is separately patentable, since Watanabe et al discloses and suggests nothing regarding the presence of silica, let alone an alkylamine-containing silica in addition to their composite sol particles.

For all the above reasons, it is respectfully requested that this rejection be REVERSED.

#### Ground (B)

Claims 10 and 14-18 stand rejected on the ground of non-statutory obviousness-type double patenting over Claims 11-14 of Watanabe et al. That rejection is untenable and should not be sustained.

The Examiner’s rationale is essentially the same as that adopted for Ground (A) above. Applicants’ response thereto is essentially the same as argued above for Ground (A).

In addition, the Examiner erroneously relies on disclosure in Watanabe et al. Even if the Examiner were correct in his findings under Ground (A), it would not establish grounds for rejection here, because the recital of the composite colloidal particles in Claims 11-14 of Watanabe et al does not include any additional recital of other colloidal particles, let alone alkali component-containing diantimony pentoxide colloidal particles having a M/Sb<sub>2</sub>O<sub>5</sub> molar ratio, where M is an alkali metal, ammonium, a quaternary ammonium or an amine, of from 0.02 to 4.00, coated on the surface of their composite colloidal particles.

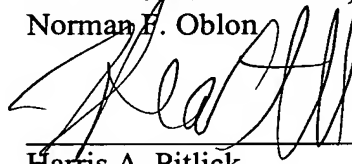
For all the above reasons, it is respectfully requested that this rejection be REVERSED.

#### VIII. CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Office Action be REVERSED.

Respectfully submitted,

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CLAIMS APPENDIX

Claim 10: The optical element according to Claim 17, wherein the component (A) is at least one silicon-containing substance selected from the group consisting of the organic silicon compounds of the formula (I) and their hydrolyzates.

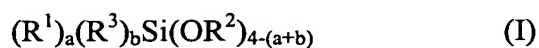
Claim 14: The optical element according to Claim 17, wherein M is an alkylamine.

Claim 15: The optical element according to Claim 17, wherein the coating material (b) of the component (B) further contains an alkylamine-containing silica.

Claim 16: The optical element according to Claim 17, wherein the coating composition contains at least one curing catalyst selected from the group consisting of metal salts, metal alkoxides and metal chelates.

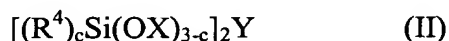
Claim 17: An optical element which comprises an optical substrate and a cured film made of a coating composition formed on the surface of the optical substrate, wherein the coating composition comprises the following components (A) and (B):

component (A): at least one silicon-containing substance selected from the group consisting of organic silicon compounds of formula (I):



wherein each of  $R^1$  and  $R^3$  is an alkyl group, an aryl group, a halogenated alkyl group, a halogenated aryl group, an alkenyl group, or an organic group having an epoxy group, an acryloyl group, a methacryloyl group, a mercapto group, an amino group or a cyano group, which is bonded to the silicon atom by a Si-C bond,  $R^2$  is a  $C_{1-8}$  alkyl group, an alkoxyalkyl

group or an acyl group, and each of a and b is an integer of 0, 1 or 2, provided that a+b is an integer of 0, 1 or 2, and the formula (II):



wherein  $R^4$  is a  $C_{1-5}$  alkyl group, X is a  $C_{1-4}$  alkyl group or an acyl group, Y is a methylene group or a  $C_{2-20}$  alkylene group, and c is an integer of 0 or 1, and their hydrolyzates; and

component (B): colloidal particles of a modified metal oxide which have primary particle diameters of from 2 to 100 nm and which contain particles (c) comprising colloidal particles (a) of a metal oxide having primary particle diameters of from 2 to 60 nm, selected from the group consisting of  $Fe_2O_3$  particles, CuO particles, ZnO particles,  $Y_2O_3$  particles,  $ZrO_2$  particles,  $Nb_2O_5$  particles,  $MoO_3$  particles,  $In_2O_3$  particles,  $SnO_2$  particles,  $Ta_2O_5$  particles,  $WO_3$  particles, PbO particles,  $Bi_2O_3$  particles,  $SnO_2-WO_3$  composite particles,  $SnO_2-ZrO_2$  composite particles,  $TiO_2-ZrO_2-SnO_2$  composite particles,  $ZnSb_2O_6$  particles,  $InSbO_4$  particles,  $ZnSnO_3$  particles and combinations thereof, as nuclei, and a coating material (b) comprising alkali component-containing diantimony pentoxide colloidal particles having a  $M/Sb_2O_5$  molar ratio, where M is an alkali metal, ammonium, a quaternary ammonium or an amine, of from 0.02 to 4.00, coated on the surface of the particles (a).

Claim 18: The optical element according to Claim 17, which further has an antireflection film formed on its surface.

Application No. 10/603,011  
Appeal Brief

EVIDENCE APPENDIX

None.

Application No. 10/603,011  
Appeal Brief

RELATED PROCEEDINGS APPENDIX

None.